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ABSTRACT

This paper describes the development of an oral language skills assessment instrument, called the Children's Language Assessment-Situational Tasks (CLA-ST), and its utilization in both formative and summative evaluation of the Tucson Early Education Model (TEEM) in Project Follow Through. First and third graders in Follow Through classrooms implementing TEEM and non-Follow Through comparison counterparts in a Southeastern community served as subjects. Language samples were collected in the fall and in the following spring in sessions designed to elicit language from the children. Pretest and posttest data were independent. Tape recordings made of each session were transcribed and coded for 11 language variables. A 2-factor analysis of variance was done with treatment (TEEM or comparison) and trials (pretest and posttest) as factors. Results indicate that primary children in the TEEM classrooms demonstrate superior language performance on many dimensions of language development. The paper concludes with a discussion of the utility of this kind of evaluation procedure to supplant traditional paper-and-pencil strategies. (Author/SB)

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# USE OF SITUATIONAL ORAL LANGUAGE TASKS IN FORMATIVE AND SUMMATIVE EVALUATION OF A COMPENSATORY PRIMARY PROGRAM[1]

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ABSTRACT

This paper describes the development and utilization of a set of oral language procedures, called the Children's Language Assessment-Situational Tasks (CLA-ST), in both formative and summative evaluation of the Tucson Early Education Model in Follow Through. The results reported here indicate that primary children in the TEEM classrooms demonstrate superior language performance on many dimensions of language development. The paper concludes with a discussion of the utility of this kind of evaluation procedure to supplant traditional paper-and-pencil strategies.

# USE OF SITUATIONAL ORAL LANGUAGE TASKS IN FORMATIVE AND SUMMATIVE EVALUATION OF A COMPENSATORY PRIMARY PROGRAM

In contrast to traditional curricula's stress on the three R's, language development, especially oral language development, has been a point of emphasis in many compensatory education programs. The etiology of this emphasis stems at least in part from research indicating that language performance can differentiate social classes (Bernstein, 1960; 1962; Hess and Shipman, 1966; Entwistle and Greenburger, 1969).

Two antithetical theoretical explanations for these observed social class differences are the deficient language view and the different language view. The deficit viewpoint attributes language differences to the "verbal deprivation" received in preschool years (Deutsch, 1965) or to genetic differences (Jensen, 1969). An alternative theoretical explanation is that of different language. A linguistic system meets the criterion of a different language if it meets the communication demands of at least one community (Yoder, 1970). This differentiation of social class by language can be seen as a result of the sociological structure of cultures or subcultures requiring habitually different language behavior patterns of its members (Craig, 1972; Bernstein, 1972).

Although research does not yet conclusively support one viewpoint, the trend in the literature is supportive of the different language explanation (Shriner and Miner, 1968; Brown, Cazden, and Bellugi, 1969; Day, 1974).

The parameters of the differences in the processes of written and oral language are yet to be delineated. The extant literature suggests that many linguistic structures appear in oral language prior to their

appearance in the written mode (Harrell, 1957; O'Donnell, Griffin, and Norris, 1967).

The current lack of valid, reliable instrumentation to assess oral language (Cazden, 1975) renders oral language instruction less legitimate than other curriculum areas. School personnel tend to value that which is evaluated. This valuation comes from the instructional guidelines/objectives provided by such instruments.

Situational Variables

Situational variables in research and evaluation are powerful and well-documented (Mischel, 1968). In a survey of language research, Moore (1971) points out that intra-child language differences in varied situations were greater than inter-child differences, due to both social and cognitive demands perceived by the speaker.

Deficiences in meeting or perceiving the demands of a particular situation can be a partial explanation for the observed sub-cultural differences in language (Cazden, 1970). Ervin-Tripp (1970) hypothesized that sub-cultural differences may reside more in differences in the situations to which cultural groups apply their skills than to underlying ability differences. Cazden (1974) questions the validity of measuring a product (e.g., language performance) independent of the context in which language skills were acquired and practiced. Research has indicated that the frequency of standard language features increase (1) when the language is sampled in the school room, (2) when the interviewer is an authority figure, and/or (3) when the interviewer uses standard English only, rather than variable dialects.

Prediction and/or evaluation based solely on standardized language tests should be done with consideration of situational variables. Negative evidence is mute with respect to the status of underlying capacity (Labov, 1970). Although standard scoring techniques are lacking, studies which attempt to compare free language samples with test scores yield very little correspondence when both situations are supposed to reflect usage of a given type of language (Dever, 1968; Jones and Wepman, 1965). Linguistic features elicited by one situation may be absent from other varied situations. Standardized tests (e.g., the Grammatic Closure subtest of the ITPA; the Northwestern Syntax Screening Test) typically consist of single-sentence tasks presenting highly selected items. The demands placed on a child in conversation cannot be evaluated with such tasks (Lee and Canter, 1971).

Individualized assessment of language performance may be one way to alleviate these and other difficulties in evaluation (Severson and Guest, 1970). Combining this recommendation with the philosophy of many open classrooms that the best measure of a child's work is his work (Barth, 1972), one arrives at the use of situational tasks in evaluation.

As an adjunct to traditional assessment, situational tasks offer the following advantages: (a) flexibility re goal-evaluation; can be designed to assess social, emotional and cognitive development other than traditional academic skills; (b) minimizes artificiality of testing situation; occurs within the instructional setting with familiar adults, therefore maximizing transfer from the learning situation to the testing situation; (c) incorporated into routine classroom activity,

such as a group discovery experience or learning center task; (d) opportunity to assess teacher-child and/or child-child interactions as well as child-based outcome data; (e) articulated to instructional goals, and therefore a needed first step in formative evaluation (e.g., evaluation which provides instructionally relevant information to teachers).

Purpose of Study

The Children's Language Assessment-Situational Tasks (CLA-ST) was designed in response to the need for an assessment tool of children's oral language skills that are not measured on extant standardized tests.

The following objectives guided the development of the CLA-ST: (a) to reliably assess oral language of children in grades 1-3; (b) to sample language in different situations which reflect various facets of typical classroom activities; (c) to assess children's language within the instructional milieu to reduce artificiality of testing situation and to maximize transfer from learning/practicing setting to the assessment setting; (d) to yield data analyzable by both typical analysis variables (e.g., length of T-units) and program-specific analysis variables (e.g., frequency of child-initiated questions); (e) to yield data that is applicable to both formative and summative evaluation.

## Methodology

Sample

First and third graders in Follow Through classrooms implementing the Tucson Early Education Model (TEEM) and non-Follow Through Comparison counterparts in a Southeastern community served as subjects. Follow

Through is a federally funded compensatory education program designed to provide high quality early education for Head Start graduates. First and third graders were randomly selected to participate in the sessions with the exception that third grade Follow Through students who had been in TEEM classrooms less than one year were omitted.

Pretest and posttest data for each session are independent. For example, subjects who had participated in a Session 1 group in the fall data collection were excluded from the sample for Session 1 random selection in the spring.

Procedure

Session 1. This session was designed to assess ongoing classroom teacher-child and child-child interactions. Data was gathered within the instructional setting with a group of three children working with their own classroom teacher. Structuring of teacher input was intentionally ambiguous, but the length of the session was controlled.

A tape recorder and microphone were set up in the classroom and the classroom teacher was provided with a bag of common objects. The following instructions were given to the teacher: "In this bag is an assortment of common objects. We would like you to use these materials with three of your pupils that we will select. You are free to use the materials in any way you like to elicit language from your children. We would like you to conduct your teaching session around this table. We will tape record your session. We will alert you when the 15 minutes are up. Do you have any questions?"

Session 2. This session was designed to gather language in a structured situation somewhat analogous to a typical testing situation. Three randomly selected classmates were brought to a quiet room separate from their classroom. The stimulus materials were eight

laminated, colored cartoon cards depicting a humorous fight between two men. Possible sequencing of the eight cards is numerous and intentionally ambiguous. The "teacher" was a member of the experimental team and unknown to the children. She asked the group of children structured questions about randomly selected, specified cards. In the first five-minute phase the "teacher" presented cards singly and, allowing time for responses, asked two questions: "What is happening in this picture?", and "Is there anything you want to ask about this?". Presenting two cards at a time in the second phase, two questions were asked: "Which picture comes first? Why?", and "What happened after this card?". In the final five-minute phase the "teacher" presented three cards at a time and asked: "What story do these pictures tell?" and "How could you change these cards to tell a new story?" As in Session 1, total time of this session was fifteen minutes.

Session 3. This session was included in data collection as a sample of children's free, spontaneous speech. At the completion of Session 2, the "teacher" advised the group. "I have some work to do, but you can continue to play with the cards while I do it." Depending on the school's regulations, she then left the room or removed herself to another part of the room and turned her attention away from the children. The group of three children were left with the stimulus cards and with the tape recorder operating for five minutes. The adult did not interfere, with the exception of potential damage to the children or equipment.

Data Analysis. Tape recordings of the language samples were transcribed and coded by a team of five research assistants. A consensus method of reliability was used by the research assistants for the transcriptions of the tape recordings. Twenty percent of each

assistant's coding was recoded by another assistant. The resulting reliability for all language variables was 94%, with a range of 89% to 100%.

The coding yielded data on eleven language analysis variables. These variables are described in Table 1.

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INSERT TABLE 1

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## Results

Factors in the two-factor analysis of variance were treatment (TEEM or Comparison) and trials (pretest and posttest). Tables provide mean figures of the average TEEM and the average Comparison data for each language analysis variable for pretest and for posttest. The significance column indicates if the (1) average across pretest/posttest for one treatment is significant compared to the average across pretest/posttest for the other treatment (A); or (2) treatment group by trials interaction is significant (I). A significant interaction indicates that the change from pretest to posttest scores was not equal and/or was not in the same direction for the two groups.

A significant test for trials effect is not meaningful; the data in this test were an average across the treatment variable, hence an average across TEEM and Comparison.

Session 1. In the interest of clarity, data presentation is organized by session. Table 2 presents the results of language analysis

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INSERT TABLE 2

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variables for grades one and three in Session 1. In the assessment situation designed to replicate typical classroom activity, TEEM first and third graders spoke more, used more extra-Dolch Vocabulary words, used more complete T-units, and asked more questions than did Comparison children. Comparison data was superior on several qualitative variables: type-token ratio, verb tense diversity, and length and complexity of T-units.

Session 2. In Session 2, a group of three children was asked questions by an unfamiliar adult about a set of eight cartoon cards. Table 3 presents the language analysis variables for this session for grades one and three. Session 2 was designed to gather language

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INSERT TABLE 3

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samples in a formal structured situation wherein an unknown adult asked standard questions. Overall, Session 2 yielded few significant statistics. TEEM children in both grades spoke more, used more variety in vocabulary (type-token ratio), used more extra-Dolch Vocabulary List words, used more complete T-units, and asked more questions than did Comparison counterparts. Third grade TEEM children also assigned more words to cartoon characters than did Comparison children. On the average, Comparison data indicate use of fewer present tense verbs, as well as longer and more complex T-units compared to TEEM data. TEEM-Comparison differences on these latter two variables were negligible.

Session 3. In Session 3 language samples were gathered in a free speech, peer situation characterized by the absence of a controlling adult. Language analysis variables are presented in Table 4.

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INSERT TABLE 4

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Overall, TEEM-Comparison differences in Session 3 were small, as evidenced by the lack of statistical significance on average TEEM-Comparison differences and on interactions. Trends in these data indicate first grade TEEM averages higher than first grade Comparison averages in language output, words not on the Dolch Vocabulary List, complexity and length of T-units, frequency of child-initiated questions, assignment of words to cartoon characters, and task-specific utterances. TEEM first graders also used fewer present tense verbs than did Comparison counterparts. First grade Comparison data reveal higher type-token ratios and more compelte T-units when compared to TEEM transcripts.

At third grade level even more than at first grade level, TEEM-Comparison differences are negligible. Averages across pretest/posttest at this grade in favor of TEEM are seen in type-token ratio, length of T-units, frequency of child-initiated questions, and assignment of words to cartoon characters. Comparison data is superior to TEEM data on the following variables: average number of words per child, verb tense ratio, non-Dolch Vocabulary List words, and the number and complexity of T-units.

In this session, no TEEM-Comparison averages or interactions were statistically significant. On a number of language analysis variables, overall averages for the two treatments were identical.

## Discussion

The Children's Language Assessment-Situational Tasks (CLA-ST) was designed to provide evaluation of oral language curriculum emphasis that remains unmeasured by standardized pencil-and-paper tests.

Evaluation goals for the CLA-ST are both summative and formative. The goals are summative in the sense that the data provide a basis for program evaluation. The results also can be viewed formatively, in that consistent linguistic strengths and weaknesses demonstrated by the children have implications for the revision or addition of classroom objectives.

Overall, patterns of linguistic abilities for TEEM children compared to Comparison children are seen both trans-situationally and across grade levels in: (1) greater language output, (2) use of extra-Dolch vocabulary words, (3) more complete T-units, (4) higher frequency of child-initiated questions, and (5) greater assignment of words to cartoon characters. Cross-situational and grade patterns of abilities of Comparison children revealed in the TEEM-Comparison analyses include: (1) greater use of a variety of verb tenses, (2) greater vocabulary diversity, and (3) longer and more complex T-units.

The fact of these language pattern consistencies in different language situations and at different ages enhances the face validity of the results. Ability patterns revealed present an accurate picture of the groups' language trends, and hence are at least a partial reflection of instructional emphases. Formative evaluation recommendations become even more cogent in light of these trans-situational and trans-grade consistencies.

Further research in this area should be guided by both applied and theoretical quesitons. Research to obtain additional estimates of reliability and validity on the CLA-ST is needed prior to the regular use of this proceiure as either a formative or summative evaluation instrument. This potential use of this or similar situational tasks as a substitute for pencil-and-paper standardized testing for both teacher-administered diagnostic tool and for program evaluation warrants further reliability-validity research. Theoretically, the questions of the relationship between oral and written language need to be answered. Do linguistic skills consistently appear in one modality before the other? What are the implications of this developmental pattern for education?

REFERENCES

Barth, R. S. Open education and the American school. New York: Agathon Press, 1972.

Bernstein, B. Language and social class. British Journal of Sociology, 1960, 11, 271-76.

Bernstein, B. Social class, linguistic codes and grammatical elements. Language and Speech, 1962, 5, 221-40.

Bernstein, B. A critique of the concept of compensatory education. In C. Cazden, V. P. John, D. Hymes (Eds.), Functions of Language in the Classroom. New York: Teachers College Press, 1972.

Brown, R., Cazden, C., & Bellugi, U. The child's grammar from I to III. In J. P. Hill (Ed.), 1967 Minnesota Symposium on Child Psychology. Minneapolis: University of Minnesota Press, 1969.

Cazden, C. B. Neglected situation in child language. In F. Williams (Ed.), Language and poverty: Perspectives on a theme. Chicago: Markham Press, 1970.

Cazden, C. B. Concentrated vs. contrived encounters: Suggestions for language assessment in early childhood education. Paper presented at Seminar on Language and Learning in Early Childhood, Leeds University Institute of Education, January, 1974.

Cazden, C. B. Unstructured talk at Language Evaluation Conference, Arizona Center for Educational Research and Development, Tucson: University of Arizona, College of Education, March, 1975.

Craig, D. R. Developmental and social-class differences in language. Paper presented at the Conference on Culturally and Linguistically Handicapped Children, Tucson, Arizona, November, 1972.

Deutsch, M. The role of social class in language development and cognition. American Journal of Orthopsychiatry, 1965, 35, 77-88.

Dever, R. A comparison of the results of a modified version of Berko's test of morphology with the free speech of mentally retarded children. Doctoral dissertation, University of Wisconsin, 1968.

Ervin-Tripp, S. Discourse agreement: How children answer questions. In J. Hayes (Ed.), Cognition and the development of language. New York: John Wiley, 1970.

Harrell, L. E. Jr. A comparison of the development of oral and written language in school-age children. Society for Research in Child Development, Monograph No. 22 (66:3), 1957.

Jensen, A. R. How much can we boost IQ and scholastic achievement? Harvard Educational Review, 1969, 39, 1-123.

Jones, L. V., & Wepman, J. M. Language: A perspective from the study of aphasia. In S. Rosenberg (Ed.), Directions in psycholinguistics. New York: MacMillan, 1965.

Labov, W. The logic of non-standard English. In F. Williams (Ed.), Language and poverty: Perspectives on a theme. Chicago: Markham Co., 1970.

Lee, L. L., & Canter, S. M. Developmental sentence scoring: A clinical procedure for estimating syntactic development in children's spontaneous speech. Journal of Speech and Hearing Disorders, 1971, 36 (3), 315-340.

Mischel, W. Personality and assessment. New York: Wiley, 1968.

Moore, D. R. Language research and preschool training. In C. Lavatelli (Ed.), Language training in early childhood education. Champaign, Illinois: The University of Illinois Press, 1971.

O'Donnell, R. C., Griffin, W. J., & Norris, R. R. C. Syntax of kindergarten and elementary school children: A transformational analysis. Research Report No. 8. Champaign, Illinois: National Council of Teachers of English, 1967.

Severson, R. A., & Guest, K. E. Toward the standardized assessment of the language of disadvantaged children. In F. Williams (Ed.), Language and poverty: Perspectives on a theme. Chicago: Markham Co., 1970.

Shriner, T. H., & Miner, L. Morphological structures in the language of disadvantaged and advantaged children. Journal of Speech and Hearing Research, 1968, 11 (3), 605-610.

Yoder, D. E. Some viewpoints of the speech, hearing, and language clinician. In F. Williams (Ed.), Language and poverty: Perspectives on a theme. Chicago: Markham Co., 1970.

TABLE 1

LANGUAGE ANALYSIS VARIABLES
FOR THE CLA-ST

| Category | Variable | Explanation |
|---|---|---|
| Language Output | Average number words per child | Total number of child words per session divided by the number of children in the group (3). |
| Linguistic Diversity | Type-token ratio | Number of different words (types) divided by the total number of words (tokens); yields a measure of vocabulary size. |
| | Present verbs/Total Verbs | Number of present tense verbs divided by the total number of verbs; provides a measure of diversity of verb tense usage. |
| | Words not on Dolch Vocabulary List | Frequency of words used by children that are not on the Dolch Vocabulary List; another method of measuring vocabulary size. |
| Syntactic Performance | Number of complete T-units | Frequency of complete T-units, or the simplest part of a sentence that can stand alone, together with any subordinate clauses that may be grammatically related; considering the unique demands of conversation, a T-unit can be grammatically incomplete, a simple sentence, or a complex sentence. |

TABLE 1 (cont.)

| Category | Variable | Explanation |
|---|---|---|
| Syntactic Performance | Percentage of complex T-units | The number of complex T-units divided by the number of complete T-units. |
| | Child-initiated questions | Frequency of questions from a child directed to peer or adult. |
| Miscellaneous | Assignments of words to cartoon characters | In the second session only: the frequency of direct or indirect quotes where a child provides words for a cartoon character. |
| | Task-specific/total utterances | In the peer only session: number of child responses concerning playing with the cards (their task as stated by the adult) divided by the total responses in the session. |

TABLE 2

CHILDREN'S LANGUAGE PRODUCTION: SESSION 1
COMMITTEE SESSION WITH TEACHER

| CATEGORY | VARIABLES | GRADE 1 | | | | | | | GRADE 3 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PRETEST | | POSTTEST | | PRE/POST MEAN | | SIGNIF | PRETEST | | POSTTEST | | PRE/POST MEAN | | SIGNIF |
| | | TEEM | COMP | TEEM | COMP | TEEM | COMP | | TEEM | COMP | TEEM | COMP | TEEM | COMP | |
| LANGUAGE OUTPUT | Average # Words Per Child | 247 | 223 | 337 | 214 | 292 | 219 | A*** | 412 | 284 | 337 | 376 | 375 | 330 | I** |
| LINGUISTIC DIVERSITY | Type-Token Ratio | 5.3 | 5.6 | 5.3 | 5.6 | 5.3 | 5.6 | A** | 5.5 | 5.8 | 5.5 | 5.7 | 5.5 | 5.8 | |
| | Verb Tense Ratio @ | .62 | .65 | .68 | .57 | .65 | .61 | | .71 | .68 | .70 | .62 | .70 | .65 | |
| | Non-Dolch Vocab List | 114 | 110 | 136 | 108 | 125 | 109 | | 164 | 141 | 142 | 160 | 153 | 150 | |
| SYNTACTIC PERFORMANCE | T-units | 175 | 143 | 216 | 130 | 196 | 137 | A*** | 223 | 170 | 211 | 189 | 217 | 180 | A** |
| | Average T-unit Length | 3.8 | 4.2 | 4.3 | 4.4 | 4.0 | 4.3 | | 5.0 | 4.8 | 4.3 | 5.8 | 4.7 | 5.3 | I*** |
| | Percentage Complex T-units | .06 | .09 | .08 | .08 | .07 | .08 | | .10 | .10 | .08 | .13 | .09 | .11 | I* |
| | Child-initiated Questions | 5.1 | 4.5 | 8.6 | 6.3 | 6.9 | 5.4 | | 10.9 | 3.9 | 11.0 | 5.3 | 10.9 | 4.6 | A*** |

@ The lower the verb tense ratio, the lower usage of present tense verbs compared to other verb tenses.

A = Average group differences across the pre/posttest significant at
I = Treatment group by trials interaction significant at

* = $p < .05$
** = $p < .02$
*** = $p < .01$

TABLE 3

CHILDREN'S LANGUAGE PRODUCTION: SESSION 2
COMMITTEE SESSION WITH NEW ADULT

| CATEGORY | VARIABLES | GRADE 1 | | | | | | | GRADE 3 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PRETEST | | POSTTEST | | PRE/POST MEAN | | SIGNIF | PRETEST | | POSTTEST | | PRE/POST MEAN | | SIGNIF |
| | | TEEM | COMP | TEEM | COMP | TEEM | COMP | | TEEM | COMP | TEEM | COMP | TEEM | COMP | |
| LANGUAGE OUTPUT | Average # Words Per Child | 314 | 332 | 375 | 267 | 344 | 299 | I* | 434 | 391 | 451 | 389 | 442 | 390 | |
| LINGUISTIC DIVERSITY | Type-Token Ratio | 3.8 | 3.9 | 4.3 | 4.1 | 4.0 | 4.0 | | 4.4 | 4.1 | 4.2 | 3.9 | 4.3 | 4.0 | |
| | Verb Tense Ratio @ | .72 | .66 | .74 | .65 | .73 | .65 | | .70 | .66 | .66 | .68 | .68 | .67 | |
| | Non-Dolch Vocab List | 85 | 90 | 111 | 82 | 98 | 86 | | 122 | 105 | 126 | 98 | 124 | 102 | A* |
| SYNTACTIC PERFORMANCE | T-units | 175 | 190 | 196 | 142 | 185 | 166 | | 229 | 215 | 213 | 191 | 221 | 203 | |
| | Average T-unit Length | 5.1 | 4.8 | 5.2 | 5.5 | 5.2 | 5.2 | | 5.2 | 5.3 | 6.2 | 6.1 | 5.7 | 5.8 | |
| | Percentage Complex T-units | .07 | .06 | .08 | .10 | .07 | .08 | | .10 | .10 | .12 | .14 | .11 | .12 | |
| | Child-initiated Questions | 9.8 | 10.4 | 9.6 | 5.7 | 9.7 | 8.0 | | 13.3 | 10.2 | 8.6 | 7.6 | 10.9 | 8.8 | |
| MISCELLANEOUS | Assignment of Words to Cartoon Characters | .6 | 2.1 | 4.1 | .7 | 1.4 | 2.4 | I*** | 4.6 | 3.1 | 3.6 | 1.6 | 4.1 | 2.3 | |

@ The lower the verb tense ratio, the lower usage of present tense verbs compared to other verb tenses.

A = Average group differences across the pre/posttest significant at
I = Treatment group by trials interaction significant at

* = $p < .05$
** = $p < .02$
*** = $p < .01$

TABLE 4

CHILDREN'S LANGUAGE PRODUCTION: SESSION 3
CHILDREN LEFT ALONE

| CATEGORY | VARIABLES | GRADE 1 | | | | | | | GRADE 3 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PRETEST | | POSTTEST | | PRE/POST MEAN | | SIGNIF | PRETEST | | POSTTEST | | PRE/POST MEAN | | SIGNIF |
| | | TEEM | COMP | TEEM | COMP | TEEM | COMP | | TEEM | COMP | TEEM | COMP | TEEM | COMP | |
| LANGUAGE OUTPUT | Average # Words Per Child | 130 | 132 | 133 | 129 | 132 | 130 | | 162 | 158 | 144 | 162 | 153 | 160 | |
| LINGUISTIC DIVERSITY | Type-Token Ratio | 3.9 | 4.4 | 4.1 | 4.2 | 4.0 | 4.3 | | 4.4 | 4.3 | 4.5 | 4.4 | 4.7 | 4.4 | |
| | Verb Tense Ratio @ | .69 | .58 | .72 | .74 | .70 | .72 | | .72 | .74 | .68 | .64 | .70 | .69 | |
| | Non-Dolch Vocab List | 40 | 39 | 46 | 44 | 43 | 41 | | 57 | 50 | 53 | 60 | 55 | 55 | |
| SYNTACTIC PERFORMANCE | T-units | 78 | 80 | 75 | 81 | 76 | 81 | | 86 | 89 | 83 | 80 | 85 | 85 | |
| | Average T-unit Length | 4.3 | 4.8 | 5.0 | 4.4 | 4.6 | 4.6 | | 5.2 | 5.0 | 5.1 | 5.0 | 5.2 | 5.0 | |
| | Percentage Complex T-units | .08 | .07 | .08 | .08 | .08 | .07 | | .09 | .12 | .11 | .11 | .10 | .12 | |
| | Child-initiated Questions | 11.3 | 7.3 | 10.4 | 14.3 | 10.9 | 10.8 | | 9.5 | 9.1 | 7.9 | 6.2 | 8.7 | 7.6 | |
| MISCELLANEOUS | Assignment of Words to Cartoon Characters | .9 | 1.0 | .8 | .2 | .8 | .6 | | 4.3 | .7 | .4 | 1.0 | 2.4 | .8 | |
| | Task Specific | .7 | .8 | .8 | .7 | .7 | .8 | | .7 | .7 | .8 | .8 | .8 | .7 | |

@ The lower the verb tense ratio, the lower usage of present tense verbs compared to other verb tenses.

A = Average group differences across the pre/posttest significant at
I = Treatment group by trials interaction significant at

* = $p < .05$
** = $p < .02$
*** = $p < .01$